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Sent: Tuesday, August 25, 2020 6:06 PM
To: Monroe, Pamela <Pamela.Monroe@sec.nh.gov>
Cc: Ethan Mollasalehi <Ethan_Mollasalehi@transalta.com>
Subject: Antrim Wind - ADLS update, clarifications and performance statistics

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Dear Ms. Pamela Monroe,

Per your request, here is an update regarding the Aircraft Detection Lighting System (ADLS) at Antrim Wind Energy facility (AWE) and some clarifications regarding the system requirements and current performance.

Clarification on the ADLS requirements

Per Federal Aviation Administration (FAA), the main purpose of the ADLS is as follows (ref: FAA AC 70/7460-1L section 14.1):

Aircraft Detection Lighting Systems (ADLS) are sensor-based systems designed to detect aircraft as they approach an obstruction or group of obstructions; these systems automatically activate the appropriate obstruction lights until they are no longer needed by the aircraft. [...]

Per the NHSEC Decision and Order Granting Application for Certificate of Site and Facility (March 17, 2017), more specifically the Subcommittee Deliberation for the lightning, AWE's ADLS must be approved by the FAA (see our underlying in the excerpt below):

*The Subcommittee finds that the light associated with operation of the Project will not have an unreasonable adverse effect on health and safety if the Project will be equipped with the ADLS. In reaching this conclusion, the Subcommittee considered that the Project's lights will be radar operated, to secure their safe operation, and **the Applicant will have to receive prior approval from the FAA for the installation of the ADLS.** The Subcommittee also considered that it did not receive any reports, or scientific evidence that would verify that the Project's lighting will have an unreasonable adverse effect on human health.[...]*

To be approved by the FAA, the AWE's ADLS complies with all requirements of FAA AC 70/7460-1L. Above the main purpose reproduced above, AWE's ADLS must also comply with several other technical requirements, including but not limited to :

- Section [14.2.2.1](#): [...] *In the event detection of the aircraft is lost while being continuously monitored within the 3 NM/1,000 foot (5.5 km/304 m) volume, the ADLS should initiate a 30-minute timer and keep the obstruction lights on until the timer expires. [...]*
- Section [14.2.5.1](#): *In the event of an ADLS component or system failure, the ADLS should automatically turn on all the obstruction lighting and operate in accordance with this AC as if it was not controlled by an ADLS. The obstruction lighting must remain in this state until the ADLS and its components are restored.*

As there are specific safeguards to assure the safety of the public and the air traffic, in order words and as mentioned by the ADLS manufacturer in his May 1, 2020 letter, "[...] the system is designed to only allow the obstruction lighting to be turned off when there is absolute certainty of no movement within the FAA determined Detection Zone."

Uncertainty events ergo Target lost & FAA required 30 mins timer event

We now realize that the terminology used previously may have cause some confusions. The so call “Uncertainty events” refers to the requirement for FAA AC 70/7460-1L section [14.2.2.1](#) reproduced above. These events refer to a 30-mins timer that keeps the lights on when an object tracking is lost before exiting the Detection Zone. The initial terminology is the technical one used by the ADLS manufacturer. However, we will now refer to these instances as “Target lost & FAA required 30 mins timer event” as this (longer) term reflects more adequately what it is.

ADLS performance statistics

Per your request, another 14 days of ADLS performance statistics has been assembled. The data is presented on a per night basis representing the total duration of aerial obstruction light illumination (e.g. on the night of August 9, lights were on for a total time of 1.6 hours between twilight on the evening of August 9 till sunrise on the morning of August 10). The table also presents the number of Target lost & FAA required 30 mins timer event (see clarification above).

Night of	Lights on (hours)	Target lost & FAA required 30 mins timer event
2020-08-09	1.6	3
2020-08-10	1.3	2
2020-08-11	0.6	1
2020-08-12	2.1	4
2020-08-13	1.0	1
2020-08-14	1.6	3
2020-08-15	2.1	3
2020-08-16	0.6	1
2020-08-17	0.1	0
2020-08-18	0.2	0
2020-08-19	2.0	1
2020-08-20	2.4	3
2020-08-21	0.4	0
2020-08-22	10.4*	0

*see paragraph below regarding an ADLS outage that occurred that night

ADLS protection during post-tropical storm

As previously mentioned and per your request, this section is to confirm that during the nights of Aug 4-5 and 5-6 the ADLS operated a protection mode to safely shut the radar systems down due to high winds; during this period, the aerial obstruction lights were turned on as required by the FAA. We suspect that this distinctive high winds event was caused by the post-tropical storm of tropical cyclone Isaias which was moving north along the U.S. East Coast during that period (<https://blogs.nasa.gov/hurricanes/2020/08/05/isaias-was-ptc-9-atlantic-ocean-7/>). On August 6, the necessary verification by the ADLS manufacturer were completed and the system normal operation mode was restored. Therefore, the situation is resolved.

ADLS outage during the nights of the 22-23 and 23-24

Our team also noticed an ADLS outage during the nights of August 22-23 and 23-24, as required by the FAA, the aerial obstruction lights were turned on as required. The ADLS manufacturer has been tasked to investigate the cause of the outage, but while writing these lines it is still unknown. However, we believe that the cause has been mitigated after different inspection and actions undertaken by the ADLS manufacturer team on August 24. Nevertheless, we will keep monitoring closely the system operational status and the ADLS manufacturer is continuing his investigation.

In conclusion, we want to reiterate that as confirmed by the ADLS manufacturer in a letter (May 1, 2020) we transmitted to your attention, the “ [...] *ADLS systems, comprising of two radars are performing correctly and as designed in accordance with the aircraft detection lighting system (ADLS) requirements specified in Federal Aviation Administration (FAA) Advisory Circular (AC) 70/7460-1L [...]*” and as such, “ [...] *the system is designed to only allow the obstruction lighting to be turned off when there is absolute certainty of no movement within the FAA determined Detection Zone.*” Also as mentioned previously, we will keep monitoring closely the system operational status.

I hope this could bring some clarity on the ADLS requirements per FAA and also put in perspective the performance of AWE's ADLS.

Thanks and best regards,

Jeff L.

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